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## Article

# What factors affect income inequality and economic growth in middle-income countries?

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# Article What Factors Affect Income Inequality and Economic Growth in Middle-Income Countries?

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**Abstract:** Income inequality in many middle-income countries has increased at an alarming level. While the time series relationship between income inequality and economic growth has been extensively investigated, the causal and dynamic link between them, particularly for the middle-income countries, has been largely ignored in the current literature. This study was conducted to fill in this gap on two different samples for the period from 1960 to 2014: (i) a full sample of 158 countries; and (ii) a sample of 86 middle-income countries. The Granger causality test and a system generalized method of moments (GMM) are utilized in this study. The findings from this study indicate that causality is found from economic growth to income inequality and vice versa in both samples of countries. In addition, this study also finds that income inequality contributes negatively to the economic growth in the middle-income countries in the research period.

**Keywords:** income inequality; economic growth; middle income countries; Granger causality test; system GMM

JEL Classification: O15; O47

### 1. Introduction

From the World Bank's classifications, middle-income countries (MICs) are nations with a per capita gross national income (GNI) between US\$1005 and US\$12,235. MICs, which are a very diverse group by region, size, population, and income level, can be broken up into lower-middle-income and upper-middle-income economies. Two MIC superpower economies—China and India—hold nearly one-third of humanity and continue to be increasingly influential players globally. The World Bank also considers that MICs are essential for continued global economic growth and stability. In addition, sustainable growth and development in MICs, including poverty reduction, international financial stability, and cross-border global issues including climate change, sustainable energy development, food and water security, and international trade, have positive spill-overs to the rest of the world<sup>1</sup>.

Alvaredo et al. (2018) provided a comprehensive review of income inequality over the last 40 years and stressed a surge in income inequality in China, Russia, and India. Particularly, in China, it was found that in 2015 the top 10 percent of the population accounted for nearly 42 percent of the national income, but the bottom 50 percent only owned 15 percent of the national income; these groups both equally shared nearly one-third of the national income in 1978. During the same period, the urban–rural income gap has widened. Urban households earned twice as much as rural households in 1978. However, they earned a 3.5 times higher amount in 2015. Similarly, over the period from 1989 to

<sup>&</sup>lt;sup>1</sup> See more at https://www.investopedia.com/terms/m/middle-income-countries.asp.

2015, the incomes of the top 1 percent and the bottom 50 percent have varied significantly in Russia. The share of the top 1 percent has increased from 25 percent to 45 percent of the national income compared to the share of the bottom 50 percent from 30 percent to 20 percent. In India, inequality has increased dramatically from the 1980s onwards, mostly due to economic reforms, leading to the share of the top 10 percent of the population accounting for nearly 60 percent of the national income.

It is widely noted that widening inequality has significant implications for growth and macroeconomic stability. Income inequality can lead to a suboptimal use of human resources, cause political and economic instability, and raise crisis risk<sup>2</sup>.

The link between income inequality and economic growth and related issues has been extensively investigated in the literature. Typical studies are those by Forbes (2000) and Barro (2000), followed by various other studies (Fawaz et al. 2014; Wahiba and Weriemmi 2014; Huang et al. 2015; Madsen et al. 2018; Nguyen et al. 2019; Vo et al. 2019). The current study was conducted to provide additional empirical evidence on growth and income inequality for middle-income countries. To the best of our knowledge, most studies on income inequality and economic growth have utilized the Deininger and Squire (1996) "high-quality" data set, although this data set has recently been criticized for its accuracy, consistency, and comparability (Atkinson and Brandolini 2001; Galbraith and Kum 2005). As a result, using this data set might produce biased results (Malinen 2012). To address this issue, on the basis of Solt (2016) study, the data set was constructed to maximize comparability without losing the broadest coverage. In this paper, we contribute to the discussion by using the latest and most updated data set from World Development Indicator and Standardized World Income Inequality with a focus on middle-income countries, which have largely been ignored in previous studies.

The rest of the paper is structured as follows. Following the Introduction, Section 2 provides a comprehensive review of the relevant literature on the income inequality–economic growth nexus. The research methodology and data are presented in Section 3. Section 4 discusses empirical findings, followed by the Concluding Remarks in Section 5.

#### 2. Literature Review

Although various studies have been conducted to investigate the relationship between income inequality and economic growth, thus far, modelling complexities have stood in the way of solid confirmation. The technical issues of endogeneity and of model specifications together with the diversified application of econometric techniques are considered to be the main factors (Fawaz et al. 2014).

The seminal study by Kuznets (1955) asserted that inequality was a consequence of economic growth. In this respect, inequality increases in the early stage of the economic development process before decreasing with further development. Since then, a large proportion of studies in the stock of documents relating inequality and economic growth have been conducted. Among them, various studies have supported a positive association (Rubin and Segal 2015; Wahiba and Weriemmi 2014; Lundberg and Squire 2003) while some analyses were in favor of a negative relationship (Majumdar and Partridge 2009; Nissim 2007). Some studies also offered a mixed result (Huang et al. 2015; Chambers 2010).

For example, Rubin and Segal (2015) presented that U.S. income inequality was positively related to economic growth in the period of 1953–2008. The data utilized in their study are income stream, which was defined as a total of wealth income and labor income; these were sensitive to economic growth and varied across income groups. Their empirical findings suggested that the sensitivity of income of the top 1 percent of the population was twice as much as that of the bottom 90 percent. In addition, empirical results also confirmed that the income of the top was more responsive to variation in market returns.

<sup>&</sup>lt;sup>2</sup> See more at https://www.imf.org/external/pubs/ft/sdn/2015/sdn1513.pdf.

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Another illustration of Kuznets' hypothesis was also found in a study by Kozminski and Baek (2017). Using a data set compounding income inequality, income, and the population of Alaska over the period of 1963–2012, together with an autoregressive distributed lag (ARDL) approach to cointegration—a widely used estimation tool (see Stock and Watson 1993; Saikkonen 1991; Narayan 2004; Masih and Masih 1996; Hendry 1995; Forest and Turner 2013; Hayakawa and Kurozumi 2008; Bewley 1979)—the authors argued that income inequality was enhanced by economic growth after a certain turning point. Notably, the findings were not sensitive regardless of income measures (e.g., Gini coefficient, Theil's Entropy Index).

On the other hand, with the data set from the Standardized World Income Inequality and World Bank, Yang and Greaney (2017) concluded that the relationship between income inequality and economic growth followed the S-shape curve hypothesis in the context of South Korea, Japan, the U.S., and China in the long run, suggesting that economic growth had a significant impact on income inequality. Nevertheless, in the short run, the authors found no association between income inequality and economic growth except in Japan.

The realization that income inequality influences economic growth has been taken into consideration, together with the findings of Kuznets (1955). Yang and Greaney (2017) argued that on the one hand, inequality induced low-income people to work more to meet their requirements, leading to an increase of growth, and on the other hand, inequality interfered with the accumulation of human capital, which, in turn, impeded growth. Various studies have investigated whether inequality contributes to economic growth and have revealed a positive relationship (Li and Zou 1998; Forbes 2000) or a negative relationship (Cingano 2014; Wahiba and Weriemmi 2014).

For instance, Fawaz et al. (2014) confirmed a negative impact of income inequality on economic growth in low-income developing countries. Their conclusions emerged from using difference generalized method of moments (GMM) for a sample of 55 low-income developing countries and 56 high-income developing countries, proposed by World Bank's classification. Furthermore, in order to demonstrate that the empirical results were not arbitrary, the authors continued to use the difference GMM on a refined sample in which countries were categorized endogenously using the threshold procedure. In conclusion, they found no difference in the relationship across the two classifications.

In other views, a negative effect of income inequality on economic growth was also stressed in the work of Madsen et al. (2018). Specifically, the authors argued that at low levels of financial development, proxied by the credit to the non-banking sector/nominal GDP ratio, income inequality hindered growth. Their conclusions emerged from the application of the two-stage least squares (2SLS) approach over a sample of 21 selected Organisation for Economic Co-operation and Development (OECD) countries from 1870 to 2011. To ensure the results were not biased by the issue of causality from growth to income inequality, external communist influence was identified as an instrument variable due to a negative association between it and income inequality being identified in the study.

Findings from Kim (2016) also contributed to this line of research. From empirical results, economic growth was negatively related to income inequality. The study employed cross-sectional data for 40 countries in the Organisation for Economic Co-operation and Development (OECD) and in the European Union observed in the period of 2004–2011, together with a fixed effect model and GMM. The results consistently indicated that income inequality truly retarded economic growth in various subsamples, which were established by income level by the ratio of nonperforming loans to bank loans.

Intricacy also stemmed from the use of qualitative tools and/or the underlying measurement of income inequality. For the former, it was stated that income inequality was found to be positively correlated with economic growth using the GMM technique (Biswas et al. 2017; Fawaz et al. 2014; Forbes 2000). Inversely, income inequality was shown to impede economic growth via the use of OLS-FE and/or OLS-RE (Alesina and Rodrik 1994; Castelló-Climent 2004; Persson and Tabellini 1994). For the latter, empirical studies have been adopting various measures of inequality such as the Gini coefficient of inequality, Generalized Entropy measures, Atkinson's inequality measures, and the

decile dispersion ratio<sup>3</sup>. Unfortunately, each measure by itself encounters some issues. Particularly, in relation to the Gini coefficient, the problem is the difference in the definition of welfare, together with the use of an equivalence scale among data sources.

#### 3. Research Methodology and Data

#### 3.1. Data

The data set was constructed from the Standardized World Income Inequality Database (SWIID), World Development Indicator (WDI), and Penn World Table (PWT). The PWT provides the latest observation at 2014. The data set is thus an unbalanced panel of data of 158 countries which were observed in the period of 1960–2014, or 2625 country–year observations. Moreover, this study also utilized country classifications by income level issued by World Bank to separate the original data set into subsamples. In total, there were four income groups including high income (47 countries), upper-middle income (45 countries), lower-middle income (41 countries), and low income (25 country–year observations. The variables used in the model are listed and explained in Table 1 in addition to a brief summary of statistics presented in Table 2. A list of countries included in the sample is reported in Tables A1 and A2 in the Appendix A.

Variable	Definition	Source
ý	Annual growth of real GDP per capita.	WDI
Ġ	Percent change in the Gini coefficient.	SWIID
PPPI	Price level of investment.	PWT
%Agriculture	The proportion of employment in agriculture out of total employment.	WDI
%Industry	The proportion of employment in industry out of total employment.	WDI
%Service	The proportion of employment in service out of total employment.	WDI

Table 1. A brief summary of variables.

Variables	Observations	Mean	S.D.	Min	Max	
	Panel A: All co	untries (	N = 158)			
ý	4046	2.05	4.78	-65.01	31.46	
Ġ	4046	0.11	0.97	-6.50	8.74	
PPPI	3917	45.86	28.30	0.15	165.16	
%Agriculture	2672	30.49	26.10	0.12	92.84	
%Industry	2672	20.82	8.88	1.97	49.55	
%Service	2672	48.68	20.20	5.06	87.59	
Par	Panel B: Middle-income countries (N = 86)					
ý	1987	2.16	5.26	-60.37	28.54	
Ġ	1987	0.02	0.78	-6.05	5.84	
PPPI	1909	33.64	16.02	4.84	120.00	
%Agriculture	1385	35.20	17.47	2.46	51.28	
%Industry	1385	20.94	7.78	5.75	49.55	
%Service	1385	43.85	13.84	12.01	78.34	

Table 2. Descriptive statistics.

In relation to the variable of interest—income inequality—this analysis employed data issued by SWIID among various sources such as the Luxembourg Income Study (LIS), the OECD Income Distribution Database, the Eurostat, and the World Bank. An explanation for the use of SWIID is its

<sup>&</sup>lt;sup>3</sup> See more at http://siteresources.worldbank.org/PGLP/Resources/PMch6.pdf.

sample coverage which is highly linked to the others. For instance, the Eurostat, through its mission, only provides statistics in Europe. LIS is another example as it only considers 50 countries around the world. Similarly, the OECD Income Distribution Database contains the Gini coefficient of 38 countries where the first observation was introduced in 2013.

In this line of research, one of the most used indices of income inequality is Deininger and Squire (1996) "high-quality" data set since various criteria were applied to standardize the inputs. However, the data set created by Deininger and Squire (1996) has been criticized for its accuracy, consistency, and comparability (Atkinson and Brandolini 2001; Galbraith and Kum 2005). Thus, studies relying on this kind of data set would encounter mistakes (Malinen 2012).

In response to the issues of coverage and comparability, Solt (2016) offered a standardized data set on income inequality which is normally referred to as the Standardized World Income Inequality Database (SWIID). The advantage of the data set is to maximize comparability without losing the broadest coverage. Since its first introduction in 2008, a number of studies have employed the data set to discuss inequality-related issues (Yang and Greaney 2017; De Haan et al. 2018).

The outcome of SWIID offered both inequality in disposable income and inequality in market income. We consider that the indicator of inequality in market income is more suitable because different countries have different tax systems.

#### 3.2. Research Methodology

The data set contains a large number of countries (158 countries) and the time frame is quite long (1960–2014), so it is reasonable to believe that omitted variables could bias our estimates of the variables of interest. This endogeneity problem is considered due to omitted variables in the fixed effect panel data setting, including country dummies and time dummies. The model can be written as follows:

$$\dot{y}_{i,t} = \theta_0 + \theta_1 \dot{G}_{i,t-1} + \sum_{i=1}^n \delta_i X_{i,t-1} + \gamma_t + \alpha_i + \varepsilon_{i,t}$$
(1)

where  $y_{i,t} = \Delta \ln(GDP_{i,t})$  is the annual growth of the real GDP per capita in country *i* at time *t*.  $\theta_0$  is the intercept.  $G_{i,t-1}$  is the logarithmic changes in the Gini coefficient.  $X_{i,t-1}$  is the vector of explanatory variables, including *PPPI*, %*Agriculture*, %*Industry*, and %*Service*, and  $\varepsilon_{i,t}$  is a stochastic error. Following Forbes (2000), we included the *PPPI* variable to account for the price level of investment, which is widely used in the open economy literature.

To account for the endogenous issue of economic growth and the reversed effect running from economic growth to income inequality, we used the dynamic panel data setting. The following model was considered:

$$\dot{y}_{i,t} = \theta_0 + \theta_1(\dot{y}_{i,t-1}) + \theta_2(\dot{G}_{i,t-1}) + \sum_{i=1}^n \delta_i X_{i,t-1} + \varepsilon_{i,t}$$
(2)

Given the presence of the first-order lagged dependent variable in the model, the assumption of strictly exogenous variable seems not to hold for the lagged dependent variable containing observations from 2 to *T* on *y* and the residual term is a collection of observations from 1 to *T*, leading to a correlation between the regressor and the error terms. Thus, the application of regression techniques based on ordinary least squares (OLS) would potentially lead to a bias in the estimate of the lagged dependent variable, even in the case of infinite individuals (Hsiao 2014). To rectify this, a typical approach, which was suggested by Arellano and Bond (1991) and is normally referred to as the difference generalized method of moments (GMM), is taking the first difference, and then using lagged levels of the dependent variable as instruments for endogenous variables in the first-difference equation.

However, several years later, Arellano and Bover (1995) and Blundell and Bond (1998) argued that those instruments were likely to be poor, so such an approach would be weak if the dependent variable was close to a random walk and the panel data was short. As such, Blundell and Bond (1998) developed another estimation technique which is known as system GMM. Technically, together with

the first-difference equation adopted in the difference GMM, the system GMM allows us to employ additional level equations and then uses first-difference lagged levels as instruments. In this paper, for the transformed equation, the lagged level dated at t - 2 was used as an instrument variable. For the level equation, the first difference dated at t - 1 was employed.

#### 4. Result and Discussion

#### 4.1. Granger Causality Test

According to the discussed studies in Section 2, it is worthy to note that there is a causal relationship between income inequality and economic growth. Nevertheless, this does not necessarily imply a causality running from income inequality to economic growth and from economic growth to income inequality in our sample. As such, we employed a procedure developed by Dumitrescu and Hurlin (2012) to test for Granger causality (see Granger 1969, 1980) in our panel data set. The following model was employed:

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \beta_{ik} y_{i,t-k} + \sum_{k=1}^{K} \varphi_{ik} x_{i,t-k} + \varepsilon_{i,t}$$

where  $x_{i,t}$  and  $y_{i,t}$  are considered variables (i.e., income inequality and economic growth in this case). The inclusion of lagged values of x implies that if past values of x significantly explain variation in the current values of y when accounting for its preceding ones, x will have a causal effect on y. In doing so, an F-test was considered with following null hypothesis:

$$H_0: \varphi_{i1} = \varphi_{i2} = \ldots = \varphi_{ik} = 0$$

If  $H_0$  is rejected at a given significant level, there is causality running from x to y. In other words, the alternative hypothesis is accepted that there is a causality running from x to y in at least one panel.

One of the assumptions of the Granger causality test, proposed by Dumitrescu and Hurlin (2012), is the stationarity of the considered variable. As such, to address the issue, we used the recently developed technique proposed by Pesaran (2007). Compared to a series of stationarity tests (Breitung 2000; Harris and Tzavalis 1999; Im et al. 2003), it takes the problem of cross-sectional dependence into account, which produces reliable results in the presence of both heterogeneity across panels and cross-sectional dependence. The findings are presented in Table 3. In the subsample of middle-income countries, all variables were stationary at their levels. Similarly, in the sample of all countries, except for the *%Industry* and *%Service* variables, all other variables were stationary. In summary, the stationarity, especially for the annual growth of GDP per capita and income inequality, allows us to examine the impact of income inequality on growth in the presence of feedback from the dependent variable using the GMM method.

Table 3.	Unit	root	tests
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Sample	ÿ	Ġ	PPPI	%Agriculture	%Industry	%Service
All countries	-7.33 ***	-3.96 ***	-3.024 ***	-2.44 ***	0.81	-1.21
	(0.00)	(0.00)	(0.00)	(0.00)	(0.79)	(0.11)
Middle-income	e -4.75 ***	-1.40 *	-3.07 ***	-2.57 ***	-3.24 ***	-1.87 **
countries	(0.00)	(0.08)	(0.00)	(0.00)	(0.00)	(0.03)

*p*-value in parentheses. \*\*\* *p* < 0.01, \*\* *p* < 0.05, \* *p* < 0.1.

In the next step, we examined the income inequality–economic growth causality nexus in the two samples. In the sample of all countries, the empirical findings in Panel A indicate the presence of unidirectional causality running from income inequality to economic growth. Similarly, in relation to the Panel B, the null hypothesis that economic growth does not Granger cause income inequality is

rejected, suggesting that a causality from economic growth to income inequality exists. Overall, there is a bidirectional causality between income inequality and economic growth. The same conclusions can be reached for the sample including the middle-income countries. Particularly, the  $\tilde{Z}$  statistics are significant at the level of 1 percent in both Panel A and Panel B, as presented in Table 4. To put it differently, a bidirectional causality between income inequality and economic growth was found in the sample. The optimal number of lags was selected using the Akaike's information criterion (AIC).

Sample	All Countries	Middle-Income Countries
Panel A		
	$H_0: \dot{G} \nrightarrow \dot{y}$	
$\widetilde{Z}$	7.02 ***	4.79 ***
$p(\widetilde{Z})$	0.00	0.00
Number of lags (AIC)	4	4
Panel B		
	$H_0: \dot{y} \nrightarrow \dot{G}$	
Ĩ	6.01 ***	5.27 ***
$p(\widetilde{Z})$	0.00	0.00
Number of lags (AIC)	4	1

Table 4.	Granger	causalit	v test
	orunger	controlline	,

*p*-value in parentheses. \*\*\* p < 0.01.

#### 4.2. Empirical Analysis

In this section, the empirical analysis on the impact of independent variables on the dependent variable is presented.

Table 5 presents the system GMM estimations<sup>4</sup>. The coefficient of income inequality, denoted by  $G_{i,t-1}$ , is negative and significant at the level of 1 percent, suggesting that income inequality decreases economic growth. The magnitude is somewhat larger for the middle-income countries sample than for the full sample. This finding is also consistent with those of previous studies (Halter et al. 2014; Castelló-Climent 2004; Deininger and Olinto 1999).

Among the explanatory variables, firstly, the PPPI, measuring market distortion on the price of investment, is also significantly negatively correlated with economic growth for both samples. This finding was also found in other studies (Fawaz et al. 2014; Forbes 2000; Perotti 1996). Secondly, *Industry* is negatively correlated to economic growth. Although the result is unexpected and contradicts growth theory, this finding is consistent with a finding from Szirmai and Verspagen (2015). With a significant and negative estimate for the all countries sample and for the system GMM estimation, the size effect of *Industry* is small. Finally, in contrast to the negative contribution of the variables above, positive impacts from *Agriculture* and *Service* on economic growth were found, which implies a positive effect of labor force on growth (Yang and Greaney 2017).

Table 5 also reports some statistics related to the system GMM. They are in relation to the Arellano and Bond test of second-order autocorrelation of the first-differenced residuals and the Hansen test of being exogenous of instrument variables. The results suggest that the null hypothesis of no second-order correlation failed to be rejected and that instruments are exogenous, which supports the validity of the GMM model.

<sup>&</sup>lt;sup>4</sup> In addition to the system GMM estimation, we also estimated the effect of inequality on growth specified in Equation (1) using the fixed effects model. The results reveal a significant negative relationship between income inequality and economic growth. The estimates using fixed effects are higher than the GMM estimation above. Various studies have documented fixed effects estimators systematically producing higher effects (Neves et al. 2016; De Dominicis et al. 2008). Results will be available on request.

	All Countries	Middle-Income Countries
Variable	GMM	GMM
1/	0.32 ***	0.47 ***
$g_{i,t-1}$	(0.09)	(0.06)
ċ	-0.45 *	-0.97 **
$G_{i,t-1}$	(0.25)	(0.46)
	-0.04 ***	-0.04 **
$1 \ 1 \ 1 \ 1_{i,t-1}$	(0.00)	(0.02)
% A aricultura	0.01 *	0.04 *
/oAgriculturei,t-1	(0.00)	(0.02)
0/ Induction	-0.07 *	-0.06
$y_{i,t-1}$	(0.04)	(0.05)
9/ Carrica	0.10 ***	0.06 *
$/\delta Ser orce_{i,t-1}$	(0.02)	(0.03)
Observations	2625	1356
Arelland Pand tast for AP (1)	Z = -3.02	Z = -4.08
Arenano-bond test for AK (1)	p > Z = 0.00	p > Z = 0.00
Arelland Pond toot for AP (2)	Z = 1.30	Z = 1.39
Arenano-dona lest for AK (2)	p > Z = 0.19	p > Z = 0.16
I I and an task	$H\chi^2$ (211) = 134.69	$H\chi^2$ (211) = 68.12
nansen test	$p > \chi^2 = 1.00$	$p > \chi^2 = 1.00$

Table 5. Estimation results.

Robust standard errors in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

#### 5. Concluding Remarks

Over the last 50 years, the impact of income inequality on economic growth has been extensively investigated. However, findings are mixed. It is argued that previous studies utilized suboptimal econometric techniques and imperfect data on income inequality. As such, this study was conducted to provide additional empirical findings on the inequality–growth nexus puzzle using a sample including only middle-income countries, which have largely been ignored in the literature. While previous studies utilized data on income inequality proposed by Deininger and Squire (1996) which have since then been considered imperfect and incomplete, this study employed a highly regarded data set on income inequality developed by Solt (2016).

Considering both cross-sectional and time dimensions, our empirical findings confirm a negative impact of income inequality on economic growth, implying that an increase in income inequality leads to a decrease in economic growth. These findings hold for both fixed effects panel model and dynamic panel model settings and for two samples—the full sample and the sample including only middle-income countries.

In addition, findings from this study confirm a positive contribution of labor force participation in agricultural and service sectors to economic growth, which is implied in the economic growth theories.

The findings of this empirical study also offer additional empirical evidence for governments in middle-income countries to formulate and implement their economic and social policies. Economic growth is generally associated with income inequality; thus, a disparity in income will, in turn, decrease the national output, leading to a reduction in economic growth. As such, policies which focus on a redistribution of economic achievement to the people, especially to those at the bottom of the income distribution, are required. Economic achievements will allow them to invest in human capital or physical capital, which offers a high rate of return. Also, policies to alleviate—though not necessarily eliminate—the capital–market imperfection through the development of financial intermediaries should be implemented. In addition, efficiency of capital allocation is required. In addition, policies to

increase minimum wage or to support accumulating assets for working families can also narrow the income gap. Further, it is recommended for policy-makers to take into consideration friendly working environment-related regulations, so that low-paid workers can make their best effort to work and earn.

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**Conflicts of Interest:** The authors declare no conflict of interest.

#### Appendix A

Countries				
Afghanistan	Costa Rica	Italy	Namibia	St. Kitts and Nevis
Albania	Croatia	Jamaica	Nepal	St. Lucia
Algeria	Cyprus	Japan	Netherlands	Sudan
Angola	Czech Republic	Jordan	New Zealand	Suriname
Argentina	Denmark	Kazakhstan	Nicaragua	Swaziland
Armenia	Dominica	Kenya	Niger	Sweden
Australia	Dominican Republic	Korea	Nigeria	Switzerland
Austria	Ecuador	Kosovo	Norway	Tajikistan
Azerbaijan	El Salvador	Laos	Pakistan	Tanzania
Bangladesh	Estonia	Latvia	Panama	Thailand
Barbados	Ethiopia	Lebanon	Papua New Guinea	Timor-Leste
Belarus	Fiji	Lesotho	Paraguay	Togo
Belgium	Finland	Liberia	Peru	Tonga
Belize	France	Lithuania	Philippines	Trinidad and Tobago
Benin	Georgia	Luxembourg	Poland	Tunisia
Bhutan	Germany	Macedonia	Portugal	Turkey
Bolivia	Ghana	Madagascar	Puerto Rico	Turkmenistan
Bosnia and Herzegovina	Greece	Malawi	Qatar	Tuvalu
Botswana	Grenada	Malaysia	Romania	Uganda
Brazil	Guatemala	Maldives	Russia	Ukraine
Bulgaria	Guinea	Mali	Rwanda	United Kingdom
Burkina Faso	Guinea-Bissau	Malta	Samoa	United States
Burundi	Guyana	Mauritania	Senegal	Uruguay
Cambodia	Haiti	Mauritius	Serbia	Uzbekistan
Cameroon	Honduras	Mexico	Seychelles	Vanuatu
Canada	Hungary	Micronesia	Sierra Leone	Venezuela
Central African Republic	Iceland	Moldova	Singapore	Vietnam
Chad	India	Mongolia	Slovenia	Yemen
Chile	Indonesia	Montenegro	Solomon Islands	Zambia
China	Iraq	Morocco	South Africa	Zimbabwe
Colombia	Ireland	Mozambique	Spain	
Comoros	Israel	Myanmar	Sri Lanka	

#### Table A1. All countries in the study.

Source: World Bank.

	1 1	. j
Countries		
Albania	India	Paraguay
Algeria	Indonesia	Peru
Angola	Iraq	Philippines
Armenia	Jamaica	Romania
Azerbaijan	Jordan	Samoa
Bangladesh	Kazakhstan	Senegal
Belarus	Kenya	Serbia
Belize	Kosovo	Solomon Islands
Bhutan	Laos	South Africa
Bolivia	Lebanon	Sri Lanka
Bosnia and Herzegovina	Lesotho	St. Lucia
Botswana	Macedonia	Sudan
Brazil	Malaysia	Suriname
Bulgaria	Maldives	Swaziland
Cameroon	Mauritania	Tajikistan
China	Mauritius	Thailand
Colombia	Mexico	Timor-Leste
Costa Rica	Micronesia	Tonga
Dominica	Moldova	Tunisia
Dominican Republic	Mongolia	Turkey
Ecuador	Montenegro	Turkmenistan
El Salvador	Morocco	Tuvalu
Fiji	Myanmar	Ukraine
Georgia	Namibia	Uzbekistan

Table A2. Middle-income countries with GNI per capita > 1045 US\$ in the study.

Source: World Bank.

Nicaragua

Nigeria

Pakistan

Panama

Papua New Guinea

Vanuatu

Vietnam

Yemen

Zambia

Ghana

Grenada

Guatemala

Guyana

Honduras

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